



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,974	09/23/2003	Norifumi Hasegawa		7883

7590 10/31/2005
LORUSSO, LOUD & KELLY
3137 Mount Vernon Avenue
Alexandria, VA 22305

EXAMINER

HAILEY, PATRICIA L

ART UNIT	PAPER NUMBER
----------	--------------

1755

DATE MAILED: 10/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/667,974

Applicant(s)

HASEGAWA, NORIFUMI

Examiner

Patricia L. Hailey

Art Unit

1755

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-7 and 10-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7 and 10-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 6, 2005, has been entered.

Applicant's submission includes a Substitute Specification, and an amendment to the claims. In the Amendment, claims 8 and 9 were canceled, and new claims 31 and 32 have been added.

Claims 1-3, 5-7, and 10-32 are now pending in this application.

Specification

The Substitute Specification filed October 6, 2005, has been entered, but is objected to for the following informality:

Although Applicants' have filed a clean copy and a marked-up copy of the Substitute Specification, page 10 of the "clean" copy contains amendments, i.e., each occurrence of the word "Embodiment" is replaced with the word "Example".

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Documents were filed on March 5, 2004.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. *Claims 1-3, 5-7, 10, 12, and 14-17 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 4-6, 8-12, and 14-17 of copending Application No. 10/509,752.*

Although the conflicting claims are not identical, they are not patentably distinct from each other because the respective sets of claims are both directed to mixed

conductors, but do not define the mixed conductors in identical terms. However, the claims correspond to one another in the following manner:

Instant claims 1-3 and 7 correspond to claims 1, 2, and 8-11 of the copending application. Instant claims 5, 6, and 10 correspond to claims 4-6, respectively, of the copending application. Instant claims 12 and 14-16 correspond to claims 12 and 15-17, respectively, of the copending application. Instant claim 17 corresponds to claim 14 of the copending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Withdrawn Rejections

All art rejections stated in the Final Rejection have been withdrawn in view of Applicant's amendments to the pending claims, and in view of the persuasive arguments traversing those rejections.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. *Claims 1-3, 5-7, 10, 11, 18, and 20-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Vanderborgh et al. (U. S. Patent No. 4,804,592).*

Vanderborgh et al. teach an electrode comprising an ion conducting material, an electron conducting material, and an electrocatalyst. See the Abstract of Vanderborgh et al.

Patentees' electrode is defined as a composite electrode having means for conducting ions, means for conducting electrons, and an electrocatalyst. See col. 3, lines 64-66 of Vanderborgh et al. This disclosure is considered to read upon the limitation "mixed conductor in the form of a single material".

The composite electrode is interposed between a solid ion exchange membrane and a current collector. See Figure 1 of Vanderborgh et al.

The ion conducting component of the composite electrode comprises an ion exchange polymer having a chemical composition similar to that of the ion exchange polymer used to construct the solid ion exchange membrane, e.g., Nafion®, or polyperfluorocarboxylic acid polymers (considered to read upon the limitation "proton conductor", etc.). See col. 5, lines 14-28 of Vanderborgh et al.

The electron conducting component of the composite electrode comprises a material such as that utilized to construct the current collector, e.g., any suitable electron conducting material, such as nickel, graphite, or a graphite plastic composite which includes a binder (considered to read upon the limitations "electron conductor

portion", "inorganic material", "carbonaceous material", "graphite", etc.). See col. 5, lines 1-13 and lines 28-30 of Vanderborgh et al.

The electrocatalyst can be selected from the noble metal group, in particular, platinum, rhodium, palladium, or alloys thereof. See col. 5, lines 33-35 of Vanderborgh et al.

Additionally, in lieu of the ion exchange polymer, materials exhibiting relatively high ionic conduction at high temperatures, such as phosphoric acid, or metal oxides such as iridium oxide or tungsten oxides, can be selected as the ion conducting component (considered to read upon the limitations "phosphorus-containing compounds", "proton conductor portion", etc.). See col. 5, line 64 to col. 6, line 3 of Vanderborgh et al.

In an embodiment, the composite electrode is formed of three separate layers, each of which comprises a mixture of carbon black, platinum or other suitable electrocatalyst dispersed and supported on carbon black, polytetrafluoroethylene as a binder, and a suitable ionic conducting material such as polyperfluorosulfonic acid. At least one layer is applied to each of the solid ion exchange membrane and current collector, and the layers are thermally bonded to each other (considered to read upon the limitation "fixed together by...covalent bonding" and "intercalation"). See Figure 2 and col. 8, lines 13-61 of Vanderborgh et al.

With respect to claim 3, the limitation "obtained by carbonizing..." places this claim in product-by-process form.

Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

In view of these teachings, Vanderborgh et al. anticipate claims 1-3, 5-7, 10, 11, 18, and 20-32.

7. *Claims 12, 13, 16, 17, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (U. S. Patent No. 6,187,157).*

Chen et al. disclose a method for producing a multiphase solid electrolyte ion transport membrane, comprising a first phase (in granulated or matrix form) comprising an ionic conductor or mixed ionic/electronic conductor (considered to read upon the limitation “mixed conductor”), and a second phase comprising particles of a metal or metal oxide coating the surface of granules of the first phase. The method involves chelating metal ions into an aqueous or organic mixture comprising a polymerizable organic monomer or prepolymer (considered to read upon “high molecular precursor” and “organic compound”) and a chelating agent, and heating the mixture to a temperature sufficient to polymerize the monomer or prepolymer to provide a liquid polymeric composition containing the chelated metal or metal oxide particles. The liquid polymeric composition is contacted with the first phase, and

mixed to form a homogenous mixture, wherein the first phase is coated with the polymeric composition. Next the admixture is heated to a temperature sufficient to combust the polymeric composition (considered to read upon the limitation “pyrolyzing the precursor”) and uniformly deposit the metal or metal oxide particles onto the surfaces of the first phase granules, thus forming a multi-phase metal coated solid electrolyte powder. The powder is optionally calcined, and further processed (e.g., by sintering or cold pressing) to form the ionic transport membrane. See col. 5, line 43 to col. 6, line 4 of Chen et al.

The membrane comprises a matrix material that conducts at least one ion, e.g., oxygen, and at least one constituent physically distinct from the matrix material (i.e., the metal or metal oxide particles), and enhances the mechanical and/or catalytic properties of the membrane, and provides electron conductivity to the membrane (considered to read upon the limitation “electron conductor”). See col. 6, lines 5-25 of Chen et al.

The above disclosure is considered to read upon claims 12, 13, 17, and 19.

Examples of the second phase include metal oxides such as tungsten oxide, and zirconia (zirconium oxide). See col. 13, lines 9-22 of Chen et al.; this disclosure is considered to read upon claim 16.

In view of these teachings, Chen et al. anticipate claims 12, 13, 16, 17, and 19.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

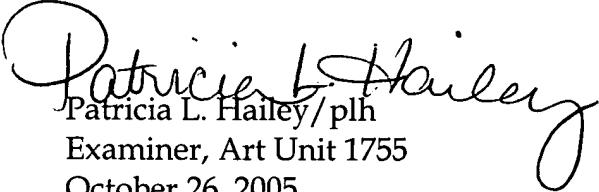
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-1369. The examiner can normally be reached on Mondays-Fridays.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Art Unit: 1755

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Patricia L. Hailey/plh
Examiner, Art Unit 1755
October 26, 2005


ANTHONY J. GREEN
PRIMARY EXAMINER